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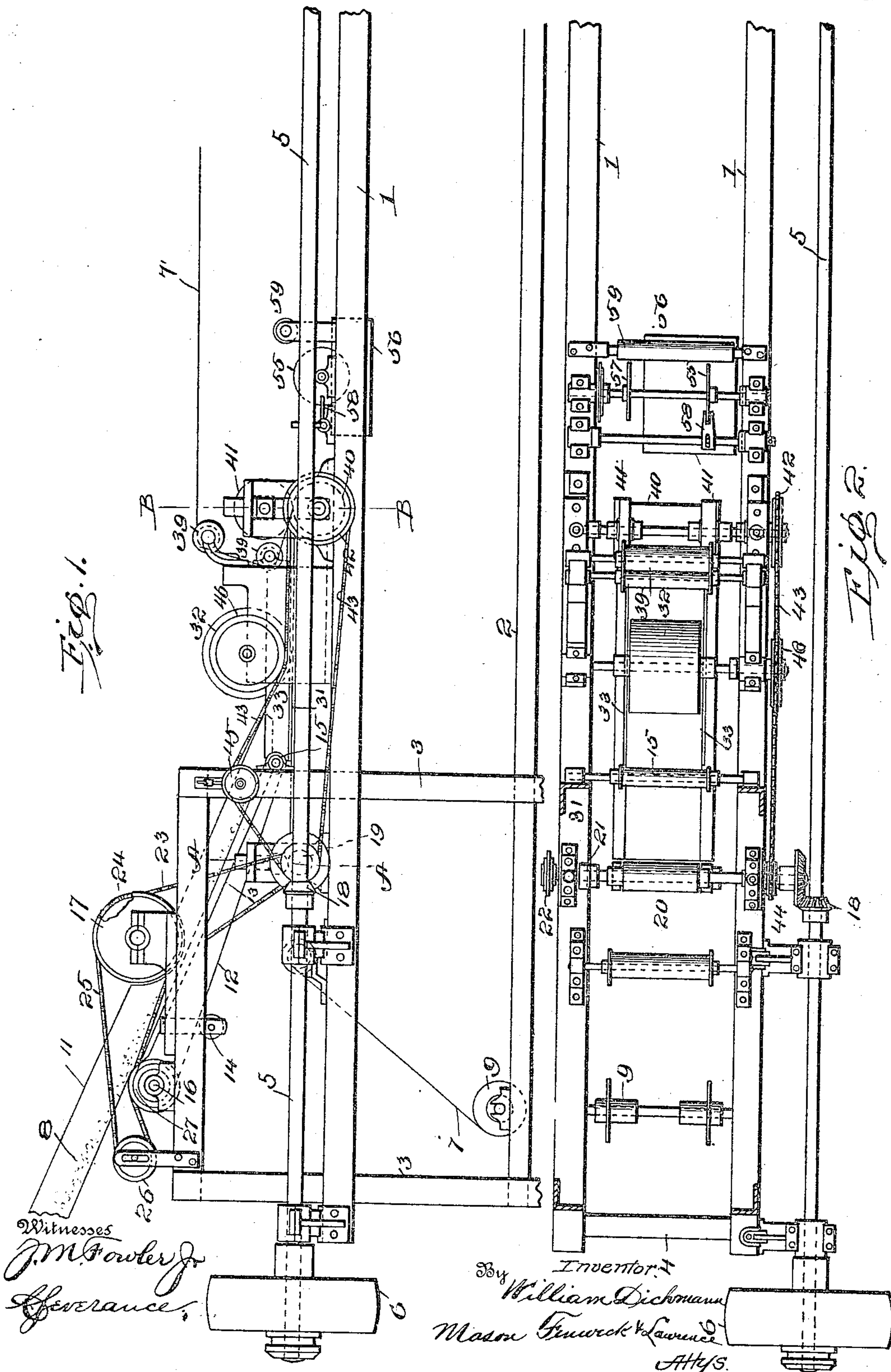
PATENTED DEC. 26, 1905.

W. DICHMANN.

MACHINE FOR MAKING BOTTLE WRAPPERS.

APPLICATION FILED NOV. 11, 1904.

7 SHEETS—SHEET 1.



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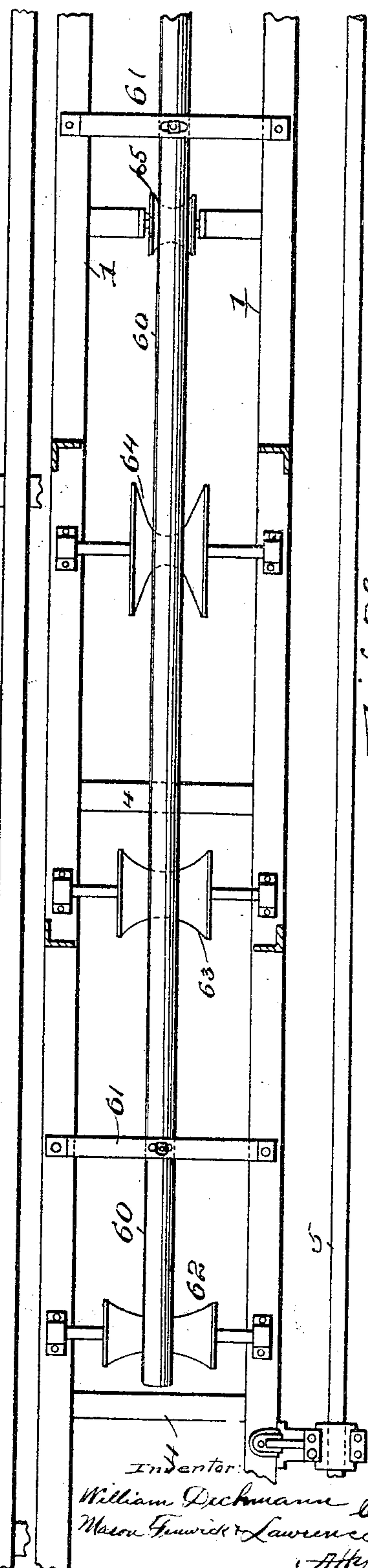
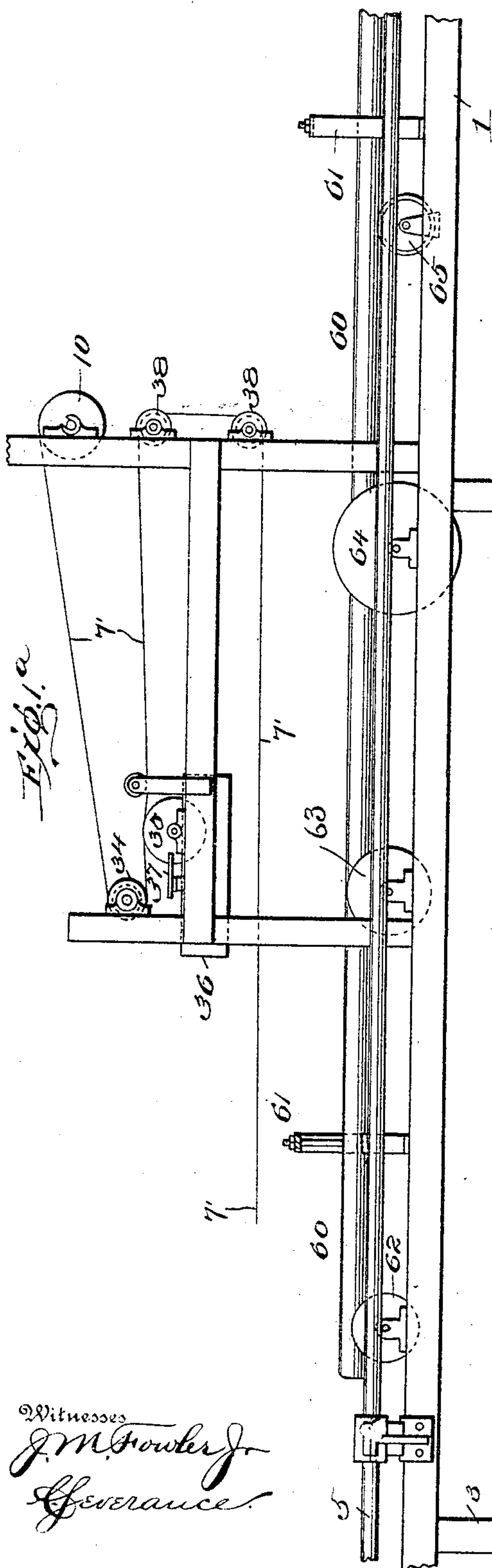
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7 SHEETS—SHEET 2.



Witnesses  
*J. M. Fowler Jr.*  
*C. Leverance*

Inventor:  
*William Dichmann*  
*Mason Fenwick & Lawrence*  
*Attys*

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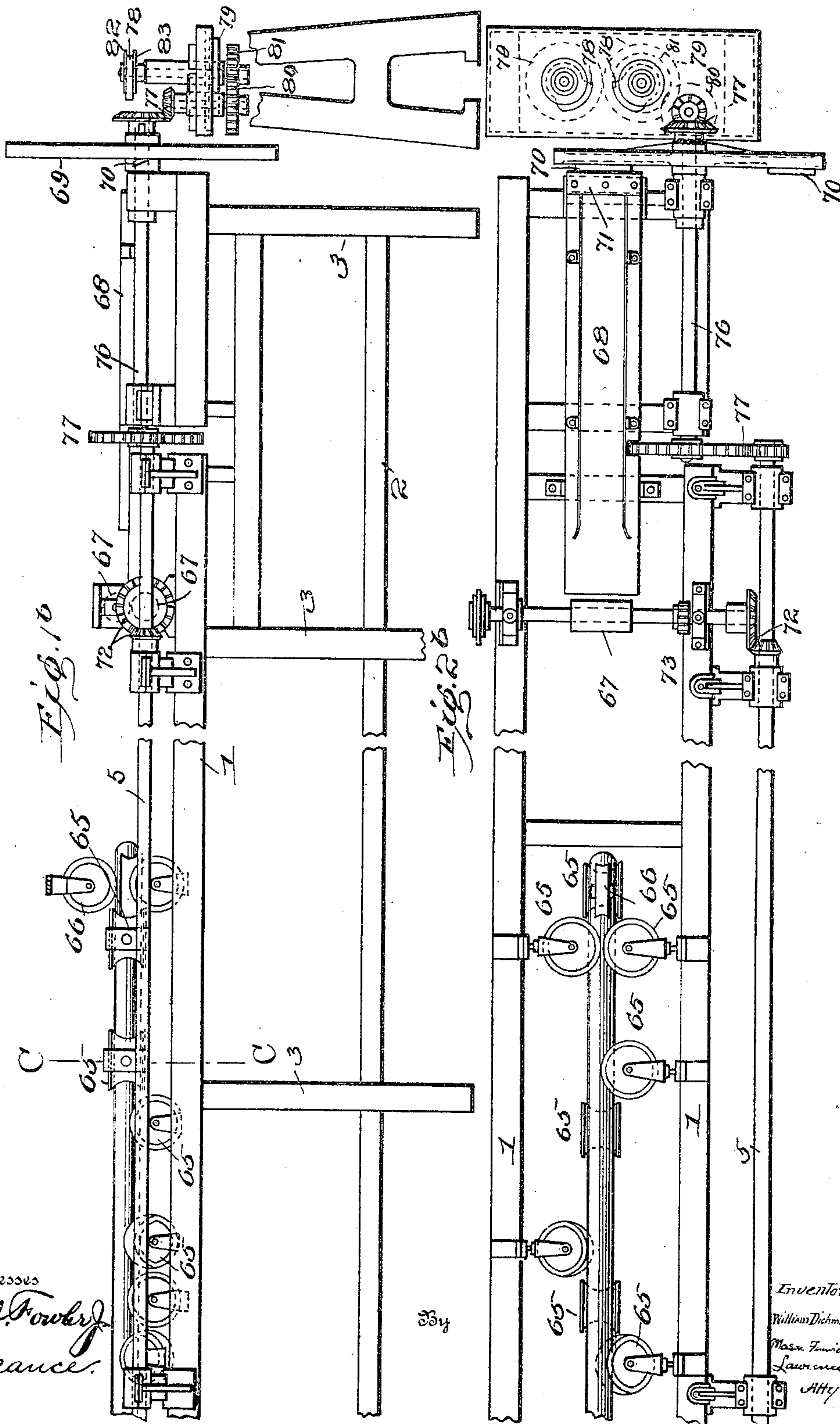
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7 SHEETS—SHEET 3.



Witnesses  
*J.M. Fowler*  
*Severance*

Inventor  
*William Dichmann*  
*Mass. Fowick*  
*Lawrence*  
*Atty's*



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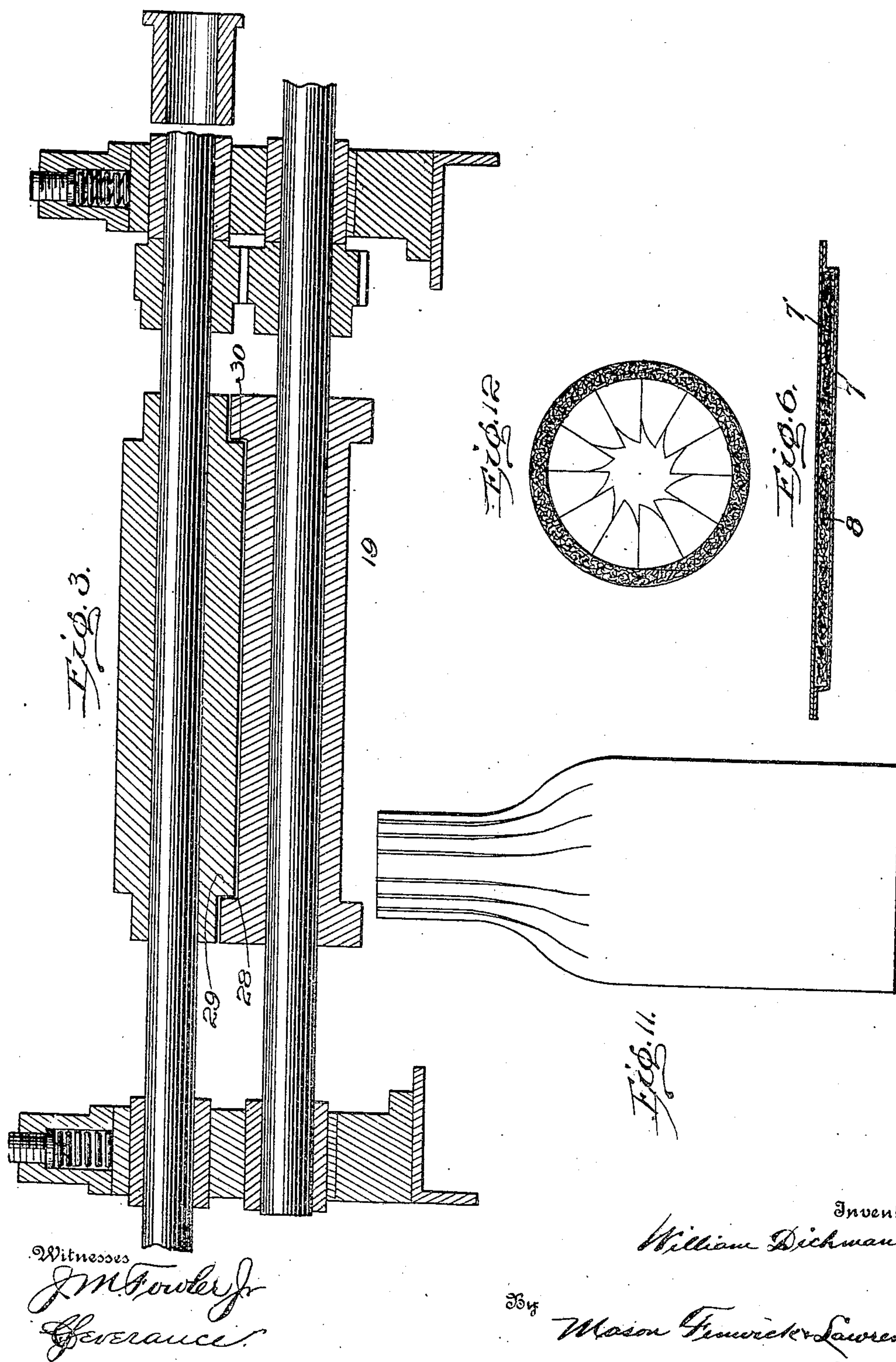
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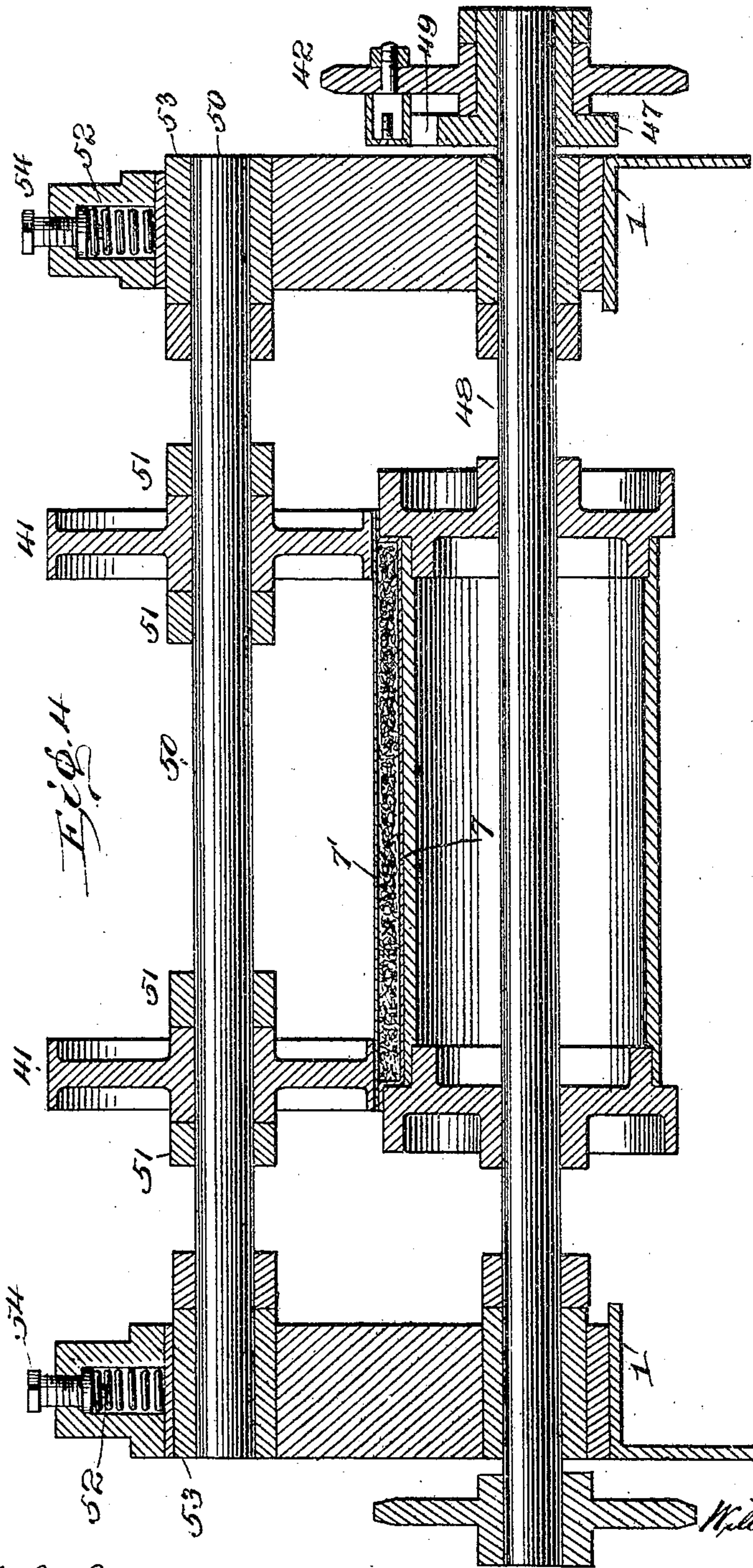
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W. DICHMANN.

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7 SHEETS—SHEET 5.



Witnesses  
*J. M. Fowler*  
*Esq.*

Inventor  
*William D. Dychmann*  
By *Mason Fenwick & Lawrence*  
Attorneys



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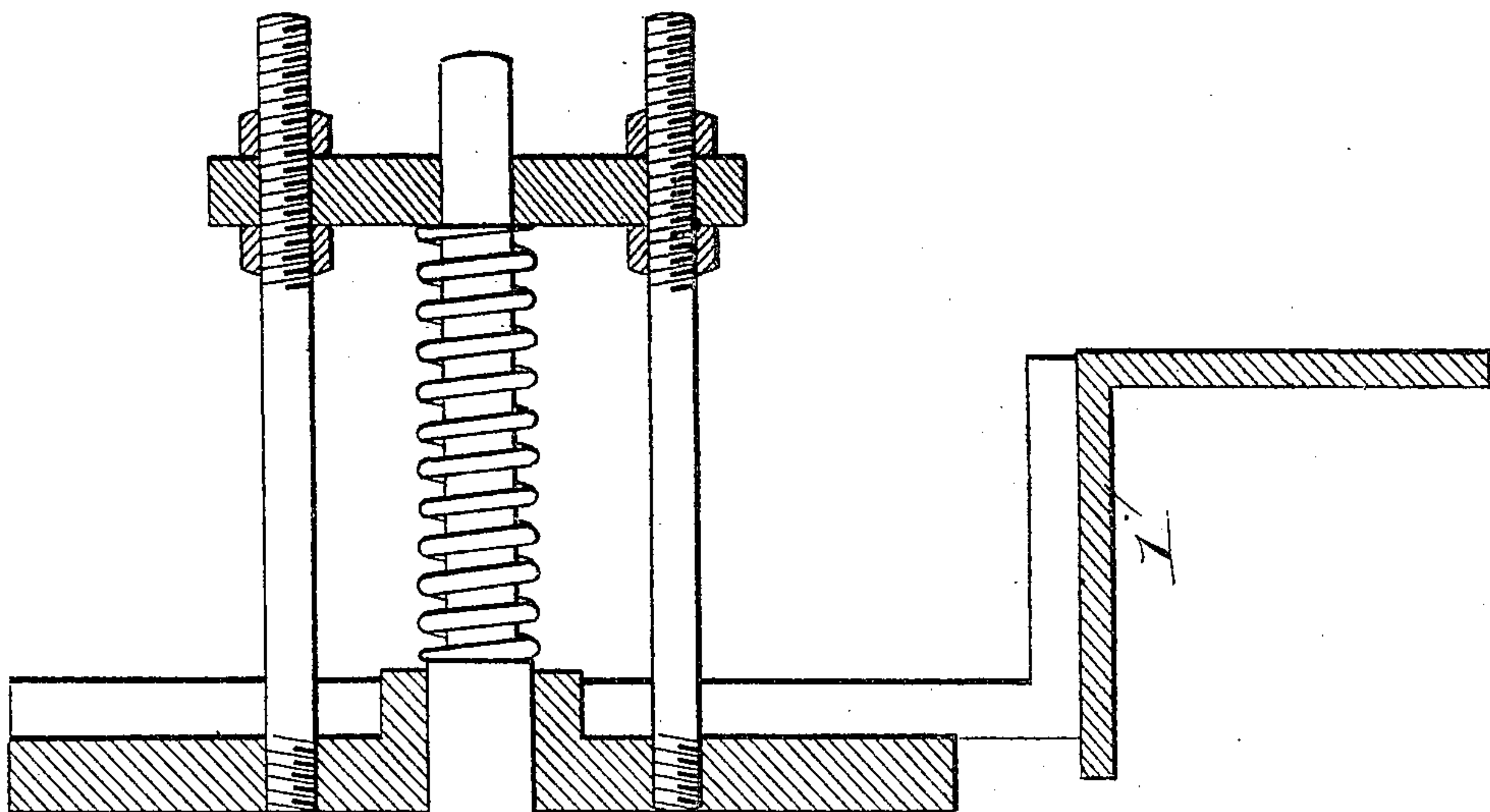
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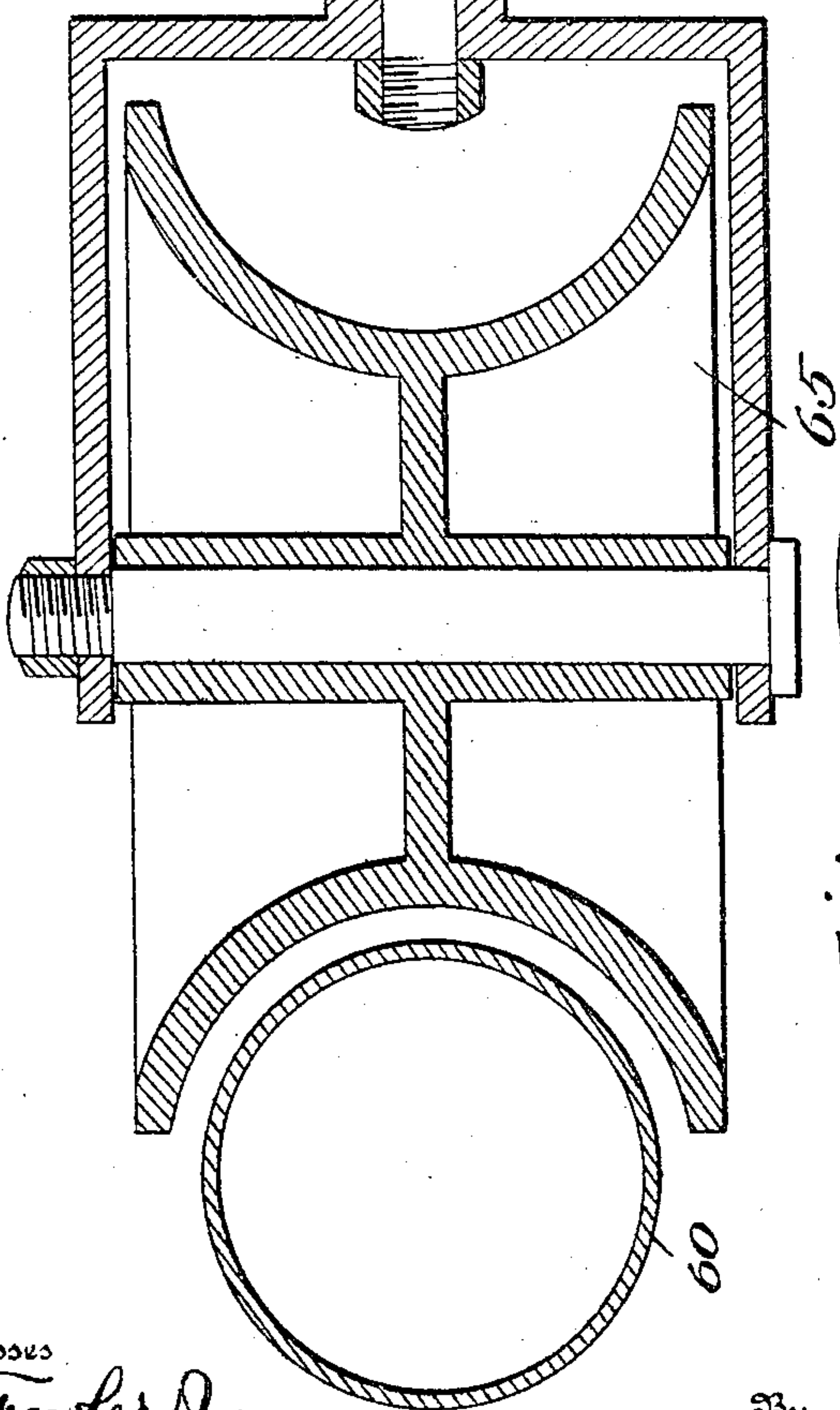
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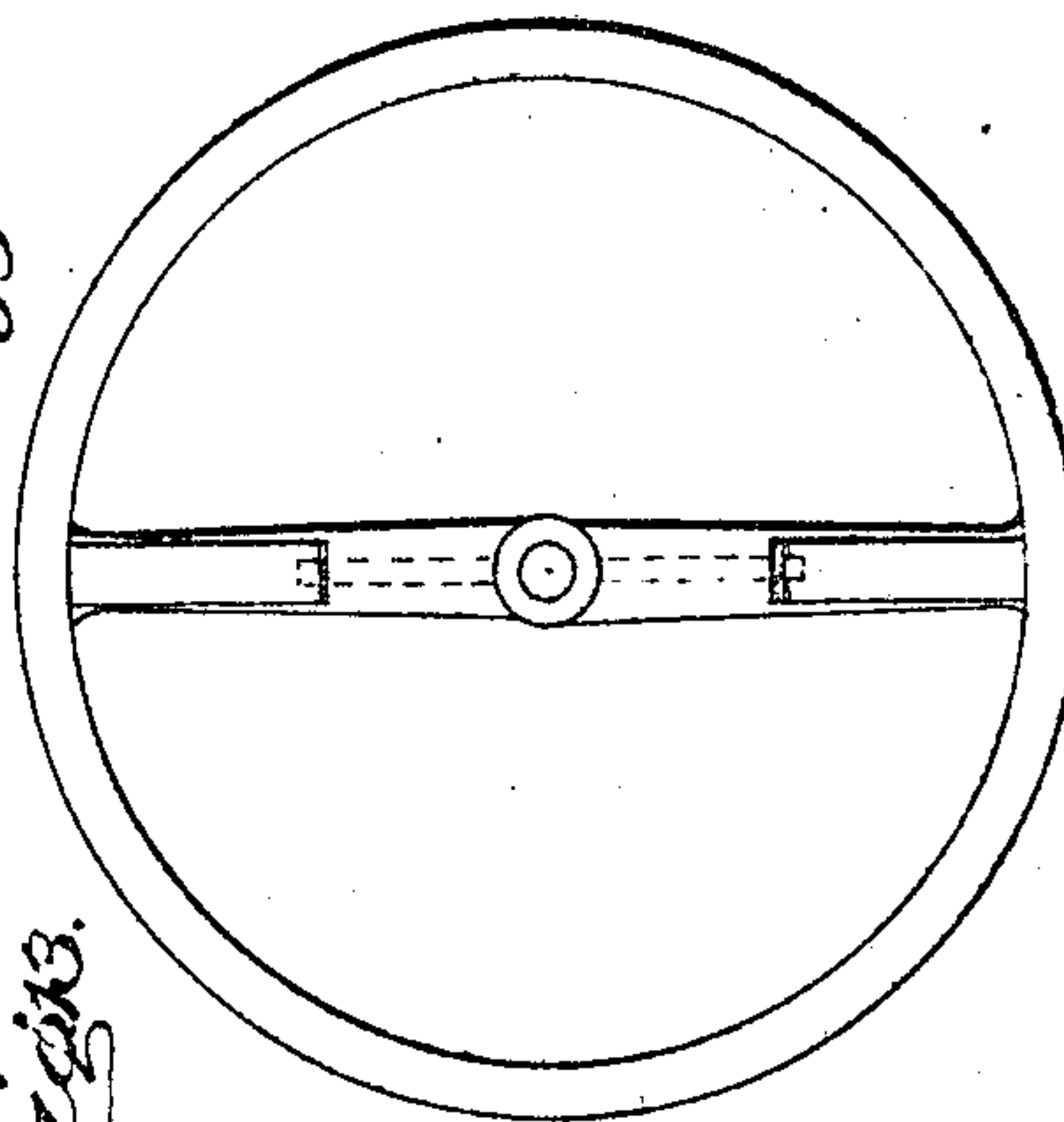
7 SHEETS—SHEET 6.



*Fig. 5.*



*Fig. 6.*



*Fig. 7.*

Witnesses

*J. M. Fowler Jr.*  
*Perance.*

Inventor

*William Dickmann*

By

*Mason Fremick & Lawrence*  
Attorneys

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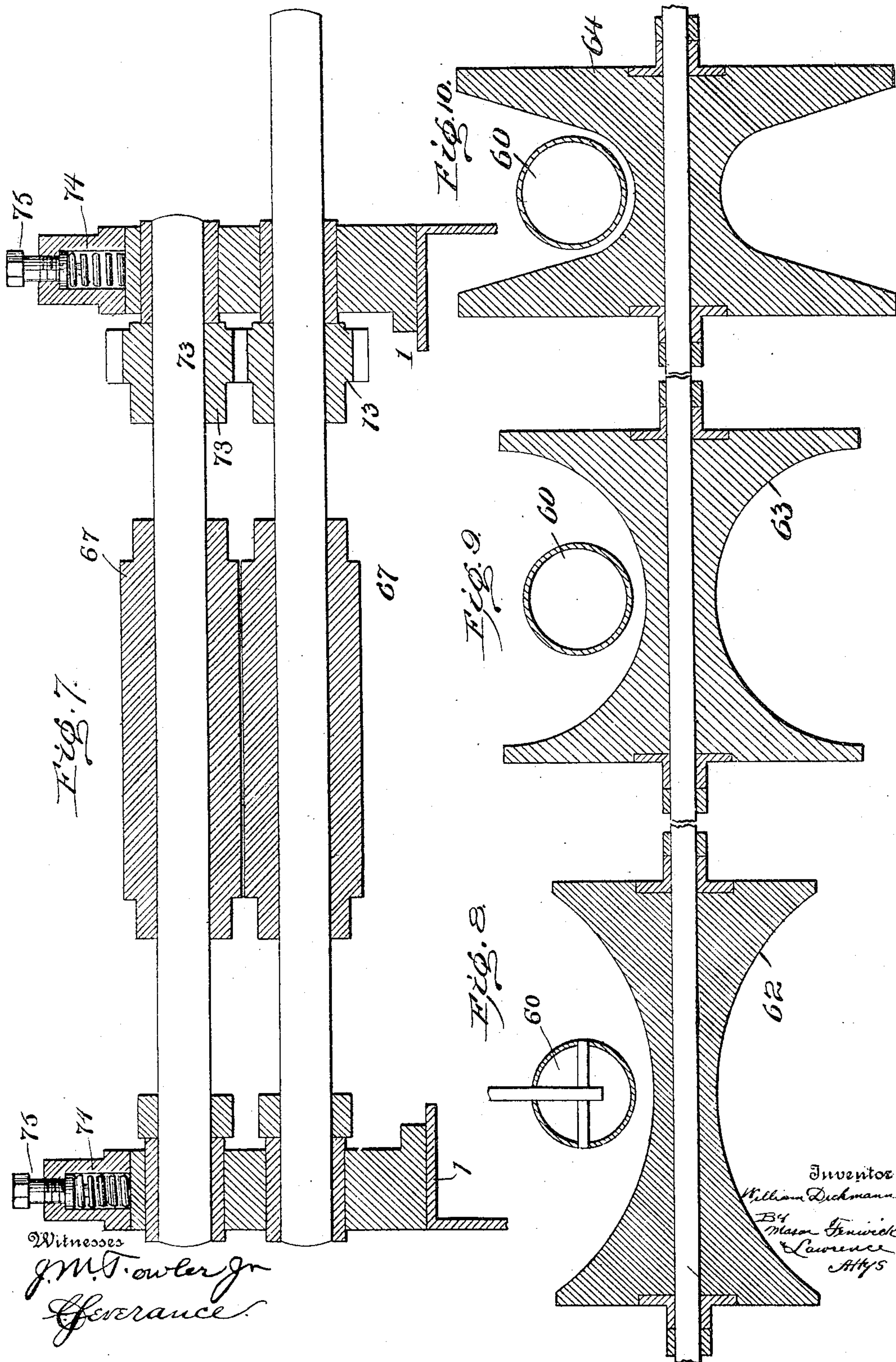
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APPLICATION FILED NOV. 11, 1904.

7 SHEETS—SHEET 7.





# UNITED STATES PATENT OFFICE.

WILLIAM DICHMANN, OF OSHKOSH, WISCONSIN.

## MACHINE FOR MAKING BOTTLE-WRAPPERS.

No. 808,348.

Specification of Letters Patent.

Patented Dec. 26, 1905.

Application filed November 11, 1904. Serial No. 232,347.

*To all whom it may concern:*

Be it known that I, WILLIAM DICHMANN, a citizen of the United States, residing at Oshkosh, in the county of Winnebago and State of Wisconsin, have invented new and useful Improvements in Machines for Making Bottle-Wrappers, of which the following is a specification.

My invention relates to a machine for the manufacture of bottle-wrappers used in packing bottles to prevent breakage.

The object of my invention is to provide a continuous method of making, forming, and crimping circular crimped bottle-wrappers and to provide a continuous machine that will insure a maximum rapidity of manufacture.

My invention consists of certain other new and novel features of mechanism and construction, which will be hereinafter more specifically set forth and described.

In the accompanying drawings, Figures 1, 1<sup>a</sup>, 1<sup>b</sup> are views arranged on successive sheets showing my improved wrapper-forming machine in side elevation. Figs. 2, 2<sup>a</sup>, and 2<sup>b</sup> are similarly arranged upon successive sheets, showing a top plan view of the machine, portions of the frame above the main frame being shown in section. Fig. 3 is a transverse vertical section of the machine, taken upon the line A A of Fig. 1. Fig. 4 is a similar vertical sectional view on the line B B of Fig. 1. Fig. 5 is a similar vertical sectional view taken upon the line C C of Fig. 1<sup>b</sup>. Fig. 6 is a transverse sectional view through the strip of wrapping material produced by the machine before it is formed into a completed wrapper. Fig. 7 is a vertical sectional view taken centrally through the feed-rolls of the mechanism. Figs. 8, 9, and 10 are detail sectional views of the principal successive forming-rolls, showing their relation to the central stationary former. Fig. 11 is a side elevation of a completed cover. Fig. 12 is a transverse sectional view through the same in its cylindrical form looking toward the crimped neck portion thereof. Fig. 13 is a side elevation of the cutter employed at the end of the wrapper-forming machine for cutting the wrapping material off in proper lengths.

1 1 represent the top rails of the frame, and 2 represents one of the bottom rails.

3 3 3, &c., represent the upright standards of the frame.

4 4 4, &c., represent the cross-rails of the frame.

5 represents the main shaft.

The power is applied to the pulley 6.

The bottle-wrapper is composed of top and bottom sheets of paper 7 7' and an intermediate filling of flexible material 8.

9 represents the roller for the bottom paper, and 10 represents the roller for the top paper.

11 represents an inclined trough, upon which the flexible filling 8 is spread and fed to the machine on top of the endless belt 12.

13 is an inclined support for the endless belt 12.

14 is an adjustable tightener to regulate the tension of the belt 12.

The filling 8 passes from the endless belt 12 onto the lower strip of paper 7 over the roller 15.

16 represents the driving-roller for moving the endless belt 12.

17 is a pressure-roller to properly compress the flexible material 8 as it passes on the endless belt 12.

18 represents bevel-gears transmitting the power from the main shaft to the bottom forming-roller 19, Fig. 3.

21 represents gears transmitting the power from the forming-roller 19 to the top forming-roller 20.

22 is a sprocket that operates the endless chain 23 to drive the pressure-roller 17.

24 represents the sprocket attached to the forming-roller 17, which operates the endless chain 25, passing round the idler 26 and over the sprocket 27, which is attached to the roller 16, that drives the endless belt 12.

The lower forming-roller 19 is recessed at 28, and a corresponding projection 29 in the top forming-roller 20 travels in said recess for the purpose of forming in the bottom paper 7 a trough 30 to receive the flexible filling 8, Fig. 6.

31 represents a recessed guide-trough in which the lower strip of paper passes as it is carried along, the flexible material being discharged upon the paper at 15.

32 represents a pressure-roller to confine the flexible material as it passes along upon the bottom strip of paper 7.

33 33 are side boards each side of the trough to confine the flexible material as it passes along.

The top strip of paper 7' is drawn from the roller 10, round a flange guide-roller 34, and over the glue-rollers 35 35, which operate in



the glue-pan 36 and supply a continuous strip of glue against the under side of the paper at each edge.

37 is an adjustable scraper to regulate the supply of glue upon the rollers 35 35.

The paper 7' is drawn round the rollers 38 38 and over the flange guide-rollers 39 39 and between the pressure-rollers 40 41, where it is pressed against and attached to the bottom strip of paper 7, containing the flexible material 8, as it passes along. The pressure-rollers 40 41 serve also to draw the two strips of paper 7 7' from their respective rollers 9 and 10.

42 represents a sprocket-wheel upon the same shaft as the roller 40 and receives the power by means of the endless chain 43, connecting with the sprocket 44 upon the same shaft as the roller 19, which is geared to the main driving-shaft 5 by the bevel-gears 18.

45 is an adjustable idler for taking up the slack of the endless chain 43.

46 is a sprocket upon the same shaft as the roller 32, which is also operated by the endless chain 43.

For the purpose of keeping the strips 7 7', which inclose the flexible material 8, at all times taut I provide a ratchet-wheel 47, keyed to the shaft 48, which carries the recessed roller 40. The spring-actuated pawl 49, which is rigidly attached to the sprocket 42, operates on the teeth of the ratchet-wheel 47. The sprocket 42 is permitted to turn upon the hub of the ratchet 47. As the feed-rollers, which will be hereinafter mentioned, operate to draw the paper through the machine this pawl-and-ratchet mechanism permits the packing-tube to be drawn forward, so as at all times to be taut. I regard this as an essential feature of my invention, as without the operation of the pawl and ratchet the action of the endless chain will not provide a proper tension. In order to gain this tightness, the feed-rollers hereinafter mentioned are constructed of a diameter slightly greater than the radius of the pressure-rollers 40 41 and have a double revolution, so that they will operate faster in pulling the strips along, and thereby gain the necessary tightness, which is relieved automatically by the operation of the pawl and ratchet, the ratchet advancing a tooth from time to time when the pull becomes too strong. The rollers 41 41 are idlers revolving loosely upon the shaft 50 and are held in a lateral position by the collars 51 51 51 51 rigidly to the shaft 50.

In order to insure the requisite pressure to properly set the glue to adhere the two edges of the strips of paper 7 7', I provide pressure-springs 52 52, which are adapted to press the boxes 53 53 downwardly. The set-screws 54 54 are provided to hold and regulate the pressure of the springs. After the two strips of paper are glued and pressed together the double strip inclosing the flexible material is

drawn over the glue-roller 55, which operates in the heated-glue vat 56. This distributes a narrow strip of glue along one edge of the united strips upon the bottom.

57 is a roller of the same size, attached to the same shaft as the glue-roller 55 and acts as a support for the united strips of paper as they pass along.

58 is a scraper to regulate the supply of glue upon the roller 55.

59 is a loosely-journaled roller for the purpose of properly carrying the united strips downwardly against the glue-roller 55. The united strips are then drawn along by the feed-rollers and rolled into tubular form by means of the several sheaves hereinafter mentioned.

60 represents a cylindrical interior former suspended from the cross-cleats 61 61, &c., which are supported by the rails 1 1.

62, 63, and 64 are exterior forming-rollers, sequentially convergent, over which the united strip of paper is drawn.

65 65 65, &c., represent spring-actuated self-adjusting sheaves, as shown in detail Fig. 5. These sheaves operate to gradually turn the united strips into a circular form round the interior former 60.

66 represents a narrow spring-actuated self-adjusting sheave adapted to press downwardly upon the tubular cover against the lower sheave 65 to press the glued edge over the opposite edge and cause it to properly adhere to form a tube, the glued edge having been previously coated by the glue-roller 55. In the process of turning the flat strip into tubular form the trough or recess 30, previously provided in the bottom strip 7, is taken up. This provision of a trough or recess in the bottom strip is necessary in order to furnish an extra width to be taken up in the process of bending or rolling the united strips into a tubular form; otherwise the lower or outer strip would tear and the upper or inner strip would "buckle."

67 67 represent the feed-rollers, which draw the finished tube and feed it to the cut-off. As the tube passes between the rollers it is pressed into a flat shape and carried along the guideway 68 to the revolving cut-off wheel 69. The cut-off wheel is provided with two oppositely-located shear-knives 70 70, which impinge against the cutting edge of the stationary cutting-plate 71, attached to the end of the guideway 68.

72 represents bevel-gears conveying the power from the main shaft 5 to the lower feed-roller 67, which is geared to the upper feed-roller by the gears 73 in order to secure a positive revolution of both rollers. The springs 74 74 serve to press the upper roller downwardly to provide a proper tension.

75 75 are adjusting-screws to hold and regulate the springs 74 74.

The pressure-rollers 67 67 are geared so as to revolve twice as fast as the pressure-roller



40 and are constructed of a diameter slightly in excess of the radius of the pressure-roller, so as to constantly pull the strip taut, as hereinbefore described. The feed-rollers 67 67  
5 thereby always provide a "draw," which is relieved automatically by the ratchet-wheel 47, as hereinbefore described.

76 represents a shaft journaled to the frame 1 and operated from the main driving-shaft 5  
10 by means of the gears 77. The shaft 76 operates the crimping device. The crimping device consists of two cams 78 78, between which the circular bottle-cover is drawn after it is cut off by the cutting-wheel 69. The  
15 cams are operated toward each other by the gears 79 79, and the motion is transmitted by means of the intermediate gears 80 81. The crimping-cams are provided with both a top plate 82 and a lower plate 83, which support  
20 the cover as it is being drawn through. The action of the cams 78 78 crimp the top portion of the cover 84, as shown in Figs. 7 and 8.

In making wrappers with the machine herein described rolls of paper for the outer and in-  
25 ner portions of the covers are mounted upon the rolls 9 and 10, the former being mounted in the lower portion of the machine, so that the web of paper drawn from it may be led to the under side of the assembled portions of  
30 the wrapper, while the other web being mounted above the machine will form the cover or top of the completed strip. The web of paper taken from the roll 9 is led to forming-rolls 18 and 19. The passage of the web of paper  
35 between said rolls forms a longitudinally-extending trough or depression in the paper. The trough thus formed affords ample space for the filling placed between the upper and lower web of the paper and also provides  
40 sufficient slack for permitting of the combined strips being turned into a cylindrical form without crowding or crimping the inner strip of material. The strip of paper thus formed is led beneath the end of chute 11, the flexible  
45 filling material 8 being permitted at this point to fall upon the upper surface of the lower web and fill the recess or trough formed therein. The strip with the filling material upon it then passes beneath the roller 32,  
50 which presses upon the filling material in such a manner as to press and partially pack the same in place. The lower web thence passes to the rolls 40 and 41. Just before entering these rolls the upper web 7' meets the lower  
55 web, and the two webs pass through the rolls 40 and 41 together. Before the web 7' reaches the said rolls 40 and 41 it is passed over gluing-rolls 35, by which it receives adhesive material upon its edges and upon one face  
60 thereof. As the two webs pass through the rolls 40 and 41 the edges thereof are pressed together by the said rolls, as clearly illustrated in Fig. 4, and since the upper web is applied with its glue the adhesive material face down-  
65 wardly the said adhesive material will be

brought between the edges of the strips as they are pressed together and secure them against separation. The combined webs, with the filling material between them, form a  
70 packing-strip, which is now in readiness for bending and securing in a cylindrical form. In order to provide means for holding the strip of material in its cylindrical form, glue or adhesive material is applied thereto, and although  
75 it may be applied to both edges of the strips of the material it is preferably applied to one edge only. The adhesive substance or glue is placed upon the strip of material by passing it from the rolls 40 and 41 over a glue-vat.  
80 Arranged above the glue-vat are rolls 55 and 57, one only of which extends into the glue-vat 56. Both rolls are needed to hold the packing-strip in proper position; but since it is only desired to apply the glue to one edge  
85 of the strip it is sufficient to have the roller 55 extend into the adhesive material. As the packing-strip passes over the rolls 55 and 57 the glue will be deposited by the roll 55 upon one edge of the combined strip. The pack-  
90 ing-strip is now in readiness for formation into a cylinder, and it is led from the glue-vat to the roll 62 and is passed beneath the stationary former 60. The roller 62 is formed with a concave periphery and begins the operation of curving the packing-strip longitu-  
95 dinally. From this point the web is extended to successively-converging rolls arranged about the former 60. Thus from the roll 62 the strip passes to the roll 63, which is concaved to a greater extent, and from the roll  
100 62 the strip passes to the still more concaved roll 64. At this point the strip will be pressed around the lower half of the former 60. The strip then passes along the former to the rolls 65, which are arranged to bear upon the sides  
105 and top of the former, and the final pressure-roll 66, arranged directly upon the top of the former 60, will press the glued edge of the material strip upon the other edge thereof, so as to hold the said strip in its cylindrical form.  
110 The packing-strip is now in readiness for cutting to reduce it to proper lengths. To facilitate the cutting operation, the strip is preferably flattened, and for this purpose is passed between the rolls 67, which press the cylin-  
115 drical strip of material flat and then feed it into the trough 68, which leads to suitable cutting mechanism. The rolls 67 not only perform the function of flattening the packing material for the cutting apparatus, but also  
120 grip the packing material with sufficient tightness to feed it through the machine, pulling it through the successive rolls and treating apparatus above described. It is for this purpose that the rolls 67 are positively driven by  
125 the gearing hereinbefore described which connects it with the shaft 5. The flattened packing-strip is forced along the trough 68 and through the open cutter-wheel 69, where it is  
130 cut off in suitable lengths by the knives 70.



The movement of the knife-wheel is so timed with respect to the feed of the packing material that the said material will only be engaged by the successively-presented knives after the  
 5 said material has been fed through the open portion of the wheel a suitable distance to form the right length of bottle-wrapper. As the successive wrappers are cut by knives  
 10 their ends are gripped between the crimping-cams 78. The cams 78 are formed with crimping portions which extend only a short distance around the periphery of the body portions of the cams, as will be herein seen by reference to Fig. 2<sup>b</sup>. The movement of the  
 15 cams is so timed with respect to the cut of the packing material that when the material is severed from the main strip the outer end of the cut piece will be gripped between the projecting crimping portions, which will contract and crimp the end of the severed wrapper for a short distance—that is, sufficient to fit upon the neck or tapering portion of a bottle. The remaining periphery of the cams 78 will not act upon the wrapper, but the wrapper will then be in readiness to be dropped from the machine and can be used for applying to bottles to pack the same.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for making bottle-wrappers of two strips of material applied together, the combination with a suitable frame, of means for producing a trough-like recess in  
 35 one of the said strips of paper, said means being made of a recessed roller and an opposing roller formed with a corresponding projection, and means for bringing the edges of the straight or flat strip and the recessed or troughed strip of paper together at their edges.

2. In a machine for making bottle-wrappers of two strips of paper material with a flexible filling, the combination, with a suitable frame and moving mechanism, of glue-rollers operating in a heated glue-vat and against the upper strip, pressure-rollers operating to draw both strips and press them together, feed-rollers operating faster than  
 45 the pressure-rollers to provide a “draw” upon the strips, and a relieving pawl and ratchet, substantially as shown.

3. In a machine for making bottle-wrappers of two strips of paper material inclosing a flexible filling, the combination, with a suitable frame and moving mechanism, of means for gluing and pressing the strips together at the edges, a glue-roller operating in a heated glue-vat and engaging one edge of the united  
 55 strips and a non-gluing roller for supporting the opposite edge, substantially as shown and described.

4. In a machine for making bottle-wrappers of two strips of paper material with a flexible filling, the combination, with a suitable

frame and moving mechanism of feed-rollers operating to draw the tubular wrapper taut and a relieving pawl and ratchet, substantially as shown.

5. In a machine for making bottle-wrappers of two strips of paper material with a flexible filling, the combination, with a suitable frame and operating mechanism, of feed-rollers, revolving cut-off knife and horizontally-arranged crimping-cams, substantially  
 70 as shown.

6. In a machine for making bottle-wrappers of two strips of paper material with a flexible filling, the combination, with a suitable frame and operating mechanism, of an  
 80 inclined trough for the filling, an endless conveying-belt, forming-rollers, a forming-trough, glue-rollers operating in a heated glue-vat, pressure-rollers, a relieving pawl and ratchet, a glue-roller operating in a heated  
 85 glue-vat, an opposite supporting-roller for the united strips, an interior former, exterior forming-rollers, consecutively-convergent, exterior-forming sheaves, a pressure-sheave, feed-rollers, a revolving cut-off knife and  
 90 crimping-cams, substantially as shown.

7. A machine for making packing-closures comprising means for bringing strips of material together at their edges, means for forming a depression or longitudinal trough in one  
 95 of said strips for spacing it from the other strip when the edges of the strips are applied together receiving a filling material, and mechanism for drawing the applied strips into a cylindrical form, the recessed strip allowing  
 100 of the rolling of the material without the crimping of the interior strip.

8. A machine for making wrapping-closures comprising mechanism for delivering inner and outer strips of flexible material, a recessed former engaging one strip and a corresponding former for depressing the central portion of the strip into the recess of the other former the edges remaining in their original plane, means for applying an adhesive  
 105 to the said edges of the strips to secure them together, and means for drawing the connected strips into a cylindrical form to produce a completed wrapper.

9. A machine for forming article-inclosing wrappers which are made of a narrow strip of flexible material and a wider strip, means for troughing the central portion of the wider strip its edges remaining flat, mechanism for applying an adhesive between the flat edges of  
 120 the two strips and formers for drawing the strip into a cylindrical shape.

10. A machine for forming bottle-wrappers comprising rolls for feeding a narrow and a wider strip of paper, forming-rolls for producing a depression or trough in the wider strip of paper, means for depositing a filling material in the recess or trough, a gluing mechanism engaging the edges of one strip, and applying an adhesive thereto, means for drawing  
 125 130



ing the combined strips into a longitudinal cylindrical shape, and means for cutting the hollow wrapping material thus formed into suitable lengths for inclosing bottles or like articles.

11. A wrapper-forming machine comprising a frame, upper and lower rolls of paper carried thereby, means for drawing a web of paper from each roll, forming-rolls engaging the lower web for producing a depression or trough therein, means for depositing a filling material into said trough, rollers operating in a glue-vat and engaging the edges of one of the paper webs for applying the glue thereto, rolls for pressing the edges of the webs together, and means for forming the wrapping material thus formed into cylindrical shape.

12. A machine for making bottle-wrappers comprising a main frame, a principal shaft mounted thereon, forming, gluing and cutting means mounted upon the main frame, and gearing actuated by the said main shaft for operating the said means, means for feeding webs of paper to the machine, an auxiliary frame mounted above the main frame provided with a chute or trough, an inclined endless belt for carrying the material from the trough to a position between the webs of paper, and a support for the upper stretch of said belt.

13. A machine for forming bottle-wrappers comprising means for feeding upper and lower webs of paper therein, means for troughing one web of the paper, wheels extending into a vat containing an adhesive material and engaging the edges of one of the webs, means for pressing the webs together at their edges comprising a roll and edge-engaging wheels, and means for forming and cutting the combined webs.

14. A machine for making bottle-wrappers comprising means for delivering webs of pa-

per, forming-rolls for making a depression in one of the webs, means for applying an adhesive to the edges of one web, means for pressing the edges together comprising a roll provided with an annular depression for receiving the depression formed in the web of paper, and wheels engaging the edges of the other web for bringing the parts together, and means for forming and cutting the combined webs.

15. A machine for forming bottle-wrappers comprising mechanism for bringing webs of paper together about a filling material, a stationary former suspended longitudinally with respect to the web of paper, depending hangers arranged above the stationary former, yieldingly-mounted forming-rollers arranged about the stationary former, for drawing the web into an elongated cylinder about the stationary former, and means for cutting the wrapper in flattened condition into suitable lengths.

16. A machine for forming bottle-wrappers comprising means for bringing two webs of paper together around a flexible filling, means for securing the webs together at their edges and then forming them into a longitudinally-extending cylinder, means for flattening the cylindrical web thus formed, a rotating knife having radially-extending cutters for engaging the flattened web, crimping-cams engaging the said cylindrical web at intervals and gearing for moving the knife and cams.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM DICHMANN.

Witnesses:

R. C. MACDONALD,  
A. R. WATERHOUSE.